

information protocol standards, location information updates and the speed of transmission).³³ During Phase 1 such issues should be left to coordination between the wireless carrier and the PSAP using protocols developed in appropriate standards bodies.

2. Phase 2

The NPRM proposes in Phase 2 to require within three years after the effective date of the order adopting rules in this proceeding, that ALI information provided to the PSAP must include an estimate of the approximate location and distance of the mobile unit from the receiving base station or cell site, calculated on the basis of signal strength or by "some other method".³⁴ Received signal strength of a mobile unit is a very poor means for estimating distance of the unit from the cell site. Signal strength from the mobile unit is dependent upon a number of factors including the type of antenna used, the height of the antenna and the location of the cell site. Such unknowns can result in significant range errors. A handheld portable transmitting from within a building will have a different strength than a car mounted mobile phone transmitting directly outside the building. Radio signals dependent on the propagation environment attenuate at various rates.

The power level of the received signal at a cell site has a log normal distribution about some mean for a particular location of the mobile unit. The standard deviation about this mean has been measured to be 8dB above or 8dB below the mean. Variations of this

³³NPRM, para. 49.

³⁴NPRM, para. 50.

magnitude lead to significant range errors when signal strength is used to compute the distance from the cell site. Signal strength alone is not a reliable factor in determining location in a cellular radio system. The reliability of such measurements simply does not justify the cost of capturing the signal strength, attempting to approximate location using the signal strength, and the PSAPs upgrading their technology to use such information.

The Commission should also reject the proposal that it merely mandate that wireless carriers and/or equipment manufacturers provide "some other method" to determine approximate location from the cell site or base station within a three year period.³⁵ Such a mandate in the absence of any reliable technology or uniform standards would be arbitrary and capricious.

3. Phase 3

Under Phase 3, the NPRM proposes to require that five years after the effective date of the order adopting rules in this proceeding that the location of the mobile transmitting unit be identified in a three dimensional environment within a radius of no more than 125 meters.³⁶ The NPRM notes that even greater accuracy could be necessary in an urban environment to determine the location of a wireless caller in a multi-story structure.³⁷

The NPRM requests comments on the technical and economic feasibility of the approach and on whether the rules propose an appropriate time frame for implementation of such features. As

³⁵NPRM, para. 50.

³⁶NPRM, para. 51.

³⁷Id.

noted above, it is extremely difficult to comment on the technical and economic feasibility of such an approach given the need for universal compatibility, the number of vendors and differing technologies claiming to provide such capability and the lack of any industry standards. SBMS' experience has been that none of the technologies are currently economically and technically feasible for use as an adjunct to cellular service. For instance, by way of example and not limitation:

Global Positioning System-Global Positioning Systems (GPS) is a satellite based system which normally provides location accuracy to within 100 meters. The price of GPS receivers are inherently high because the "intelligence" of the location system is placed in the receiver. Each receiver must be able to track the GPS satellites and do the complicated calculation of its own position from the simple reference signal sent by the satellites. Although GPS manufacturers have claimed that "mass marketing" prices will be available, such claims are neither substantiated or guaranteed. In addition to price, GPS technology is restricted by the requirement that there must be a "line of sight" between the customer's antenna and satellites. Buildings, trees, terrain and other structures block the "line of sight". Thus, GPS is also not technically feasible for cellular or other wireless voice communication services that are widely used in urban locations or within buildings (i.e. handheld cellular phones). The technical feasibility is also complicated by the fact that GPS requires a "patch" type antenna that must be horizontally oriented--similar to a pack of cigarettes lying on its face. This does not fit well with today's small portable hand held phones widely in demand with the public.

Smart Antenna Technologies/DOA Technologies -Smart Antenna technologies generally determine location through triangulation by measuring Direction of Arrival (DOA). DOA technologies employ multisensor antennas (array antennas) with sophisticated signal processing. SBMS has significant concerns regarding these developing technologies including the high cost of the antennas and associated processing, requirements for some signal processing algorithms to have precise antenna manifold calibration (antenna performance parameters can vary with environmental effects such as temperature), interaction of the DOA systems with the normal cellular network

equipment, and the performance of the technology in the mobile radio environment.

The fact that none of the ALI technologies have been deployed to use as an adjunct to cellular by any cellular carrier, given the great competitive advantage such deployment would create, demonstrates that the technologies simply are not yet feasible technically or economically for such a purpose. There is also no guarantee that any such technology will be feasible within the five year period proposed in the NPRM. Successful technology cannot merely be promulgated by the Commission.

Thus, the mandatory time frame proposed for Phase 3 should be rejected and the wireless industry, the emergency service industry and the equipment manufacturing industry should work together through standard committees and industry forums to evolve the technology to where it may be feasible. Uniform standards to assure compatibility between PSAPs, wireless networks and mobile radio units must be developed. Testing of the technologies and the standards must take place before being placed in a live emergency environment. The vision of provision of location information with 911 calls is admirable, but the technologies aren't currently available, technically or economically, nor likely to be available in the next few years. No mandatory time frames should be set for precise ALI.

5. Re-Ring/Call Back

The NPRM proposes to require, within three years after the effective date of an order adopting rules in this proceeding, that wireless systems must provide PSAP attendants with the capability to call back the 911 caller if the call is

disconnected.³⁸ Such an ability requires that ANI information be sent from the wireless network to the PSAP. Re-ring/call back is not available today. It is feasible that the cellular carriers may have the ability to send the mobile identification number (MIN) within the three year period. Transfer of the temporary local directory number (TLDN) assigned to roamers may present more of a problem. Standards need to be developed for the transmission of the MIN and TLDN to the PSAP. Again, mobile switch vendors are not willing to estimate costs prior to establishments of standards. Requiring re-ring/call back should await completion of the work of the standards bodies.

6. Common Channel Signaling

The NPRM notes that the vision of the Joint Paper is that radio transmission of 911 eventually should be capable of providing the same or similar information and features currently available from wireline calls over enhanced 911 enhanced systems.³⁹ The NPRM notes that wireless carriers would be required to provide some or all of the following information to be transferred to the PSAP:

- Call back number and mobile transmitter subscribers name
- location of call origination
- Class of service, e.g., residence, business
- Base station provider's name and telephone number
- Priority of the caller, e.g., hospital, school, etc.
- Routing information to direct the call to the proper PSAP (primary and secondary PSAP identifiers)
- Transfer numbers, i.e. separate numbers to allow transfer of calls to police, fire and ambulance service

The NPRM does not contain the text of any proposed rules regarding wireless 911 and it is not clear from the narrative

³⁸NPRM, para. 52. (emphasis added)

³⁹NPRM, para. 53.

whether such capabilities are being required on any set time frame. The NPRM proposes to require common channel signaling capabilities be implemented within three years after the effective date of an order adopting rules in this proceeding. Such a requirement is inappropriate and unwise at this time.

The Commission must keep in mind that the overwhelming majority (as high as 97%)⁴⁰ of 911 calls placed by wireless customers are Good Samaritan calls where the caller is a stranger to the incident and is not necessarily waiting at the site of the incident (e.g. reporting of accidents on highways). In such cases, information about the subscriber is not critical and may, unfortunately, discourage such Good Samaritan calls from people who do not want to "get involved" personally. Privacy is the number one issue cited by consumers reluctant to use cellular.⁴¹ Further, other information such as if a school or hospital is involved, can be provided verbally.

Requiring common channel signaling capabilities within three years is inappropriate and unwise because of the cost involved and the fact that standards have not been set. The cost of implementing the common channel signaling capabilities to perform the wireline type functions for wireless will be great. For example, the routing information referred to as being available on the wireline side is a function of the number/address table built for 911 service. Likewise, the transfer number referred to

⁴⁰See, fn. 5 above.

⁴¹"Enhanced 911 Service Will Enhance Wireless Market", Advanced Wireless Communications, March 30, 1994.

in the wireline environment is based on the location of the originating call. Such databases will not support a wireless mobile call because of the absence of a permanent address. The tables would have to be rebuilt to recognize the type of location information being transmitted by the wireless carrier, location information which is not necessarily feasible in today's environment.⁴²

More importantly however is the fact that use of common channel signaling in the wireless arena is not as advanced as compared to wireline. As the NPRM notes, there is a significant question as to whether the reliability of 911 technology will be hampered if 911 services are transferred to common channel signaling and how these features would affect the survivability of 911 SS7 based calls during a common channel signaling outage.⁴³ Thus, as the NPRM notes, the Network Reliability Council has recommended that, before 911 calls are handled by SS7, standards bodies must determine whether additional standards are required for SS7 protocol.⁴⁴ Forcing wireless carriers to implement mandatory common channel signaling for 911 calls within three years could be disastrous given the absence of adequate standards and testing. This issue should be referred to the industry standards committees and industry forums. Such referral will also allow input from local municipalities and government agencies as to whether they are

⁴²See I.B.4, above.

⁴³NPRM, para. 53.

⁴⁴Id.

willing to spend the money to upgrade the PSAPs to accept and process the information.

7. Access to Text Telephone Devices

The NPRM proposes that within one year of the effective date of the order adopting rules in this proceeding, radio services must be capable of permitting access by individuals with speech or hearing disabilities through means other than mobile radio handsets, e.g. through the use of a TTY device, to have access to 911 service.⁴⁵ It is anticipated that wireless TTY calls will be processed similar to what is done for wireline communication, either through a TTY relay service or that the PSAPs will have the ability to receive the text.

8. Equipment Manufacture, Importation and Labeling

The NPRM seeks comment on an approach which would permit wireless carriers to employ whatever technologies achieve the required objectives set forth in the NPRM.⁴⁶ Such a proposal would be disastrous. Given the mobile nature of wireless customers it would be unwise to adopt a policy that would encourage a hodgepodge of different technologies merely to meet impractical regulatory dead lines. What is and has been essential in the growth of wireless service is the establishment of standards and the compatibility of technology regardless of if the customer is in the "home system". Compatibility is achieved through the work of the standards committees and industry forums. If, after development of appropriate standards, the Commission wishes to adopt such

⁴⁵NPRM, para. 54.

⁴⁶NPRM, para. 55.

standards as a part of their equipment authorization process, a separate docket can be established for such purpose.

The NPRM also requests comments on whether a labeling requirement should be implemented within 30 days of an order adopting rules in this proceeding. Any mobile radio unit "that does not meet the proposed requirements" would be labelled both on the device and on the packaging with a statement that:

You may use this transmitter to dial for help through 911. The person answering may not know where you are, or how to call you back, unless you accurately provide your location and your full telephone number, including area and/or roaming code.

SBC believes that requiring such labels on the phones is inappropriate because it may tend to confuse and mislead the customers. For example, not all areas have 911 capabilities or accept 911 wireless calls. Thus the statement that the transmitter may be used to dial for help would be misleading and could confuse a caller who would otherwise call an alternative abbreviated dialing number such as those set up for various emergency response agencies. In reality, since much of the required technology is dependent on the wireless network and the PSAP, such labeling would need to be included on all transmitters sold until all wireless systems and PSAPs contain all of the required features. Finally, such labeling has not been required on standard telephones and pay telephones used in areas where 911 is not available or full E911 service is not available.

C. The Commission Needs to Adopt Rules Limiting the Wireless Carrier's Liability in Providing the 911 Service.

The Commission should include limitation of liability protection in its rules mandating 911 wireless accessibility.

Local exchange carriers providing the public switched network for 911 and enhanced 911 capabilities generally have their liability limited by tariff. Wireless carriers however are prohibited by Commission Order⁴⁷ from filing federal tariffs. In addition, state statutes normally limit the 911 providers liability.⁴⁸

Radio communications, by their very nature, are subject to transmission limitations caused by atmospheric conditions, terrain, capacity limitations and other factors which may attenuate signal strength. The subscriber and the carrier thus routinely acknowledge by contract that the carrier owes no duty to provide the subscriber with uninterrupted service. If the Commission is going to impose mandates for access to 911 services it must also clearly state that such mandate is not meant to impose liability on the part of the carrier--the carriers should not be forced to assume an obligation to provide guaranteed uninterrupted service.

II. THE COMMISSION NEEDS TO ADDRESS THE APPARENT CONFLICT BETWEEN THE NEW WIRETAP LEGISLATION AND THE PROPOSAL TO REQUIRE LOCATION IDENTIFICATION.

The NPRM requests comments on any privacy interests that might be involved in providing the 911 functionality.⁴⁹ SBC is concerned about the impact the recently enacted "Communications Assistance

⁴⁷Regulatory Treatment of Mobile Services, Second Report and Order, Gen. Docket No. 93-252, FCC 94-31 (March 7, 1994).

⁴⁸See, e. g. 1994 Session Laws of Kansas chapter 248, Section 36 -- "A public agency or wireless carrier shall not be liable for any form of damages resulting directly or indirectly from the total or partial failure of any transmission to an emergency telephone service."

⁴⁹NPRM, para. 56.

for Law Enforcement Act"⁵⁰ (Wiretap Act) has on the ability to supply location information. The Wiretap Act seemingly prohibits a wireless carrier from supplying location information to the authorities except upon receipt of a court order or other lawful authorization.⁵¹ The Wiretap Act specifically states that call identification information being provided pursuant to a court order for pen registers and trap and trace devices shall not disclose the physical location of the subscriber except to the extent that the location may be determined by the telephone number.⁵² If the wireless carrier is prohibited from providing location information to the public authorities it is questionable whether such information can be provided without any type of court order or authorization. The apparent conflict between the new Wiretap Act and the proposed location identification requirements must be resolved.

III. THE COMMISSION SHOULD PREEMPT STATE REGULATION OF WIRELESS 911.

The Commission has the power to preempt state regulation that affects interstate commerce when it is not possible to separate the interstate and intrastate components of the service or when state regulation impedes a federal policy.⁵³ The Commission should preempt state regulation regarding wireless 911 to the extent such regulation thwarts the Commission's goal of achieving

⁵⁰Public Law 103-414; 108 STAT. 4279.

⁵¹See, 47 USC 1002(a)(2).

⁵²Id.

⁵³Louisiana Public Service Commission v. FCC, 476 U.S. 355, 375 n. 4 (1986).

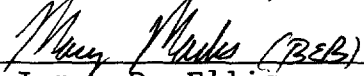
uniform compatibility between wireless and enhanced 911 systems through the work of the standards committees and industry forums. As discussed above, the Commission's goal will not be realized if a hodgepodge of different technologies are deployed prior to there being standardization to assure compatibility beyond the subscriber's home system. In addition, any state law or regulation that conflicts with the limitation of liability provisions should be preempted as such laws would thwart the development of affordable wireless service.

CONCLUSION

For the reasons stated herein the Commission should limit its requirements to those that can be achieved using technology currently deployed, with other functionalities being addressed in industry standards committees and industry forums. The Commission should also limit any requirements adopted to areas where there is a bona fide request for such functionalities. The Commission should also adopt limitation of liability requirements, preempt state regulation and address the apparent conflict with the Federal Wiretap Act.

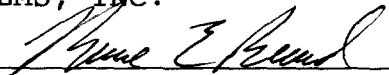
Respectfully submitted,

SBC COMMUNICATIONS, INC.

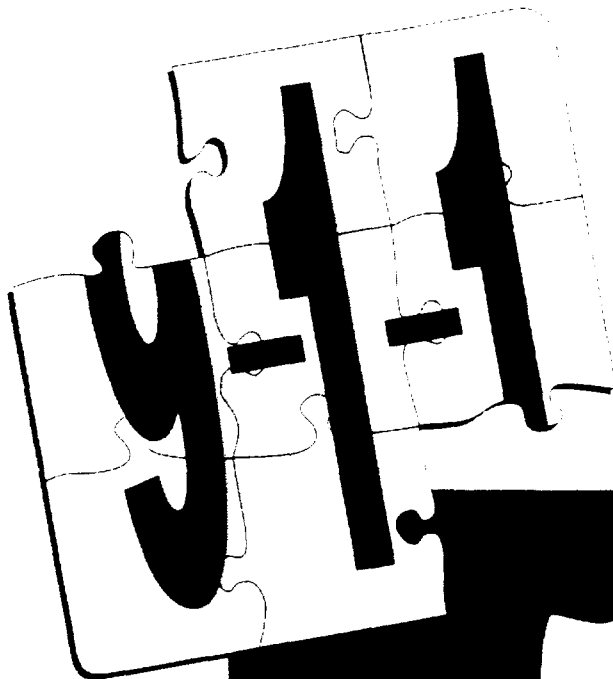
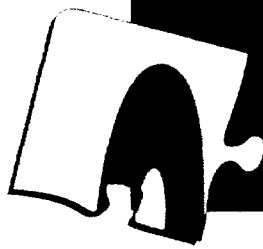

By: ~~James D. Ellis~~
Sr. Executive Vice President &
General Counsel
Mary Marks
Attorney
175 E. Houston, Suite 1306
San Antonio, TX 78205
(210) 351-3478

and

SOUTHWESTERN BELL MOBILE
SYSTEMS, INC.


By: Wayne Watts
Vice President and
General Attorney
Bruce E. Beard
Attorney
17330 Preston Rd, Suite 100A
Dallas, TX 75252
(214) 733-2008

The 9-1-1 Puzzle

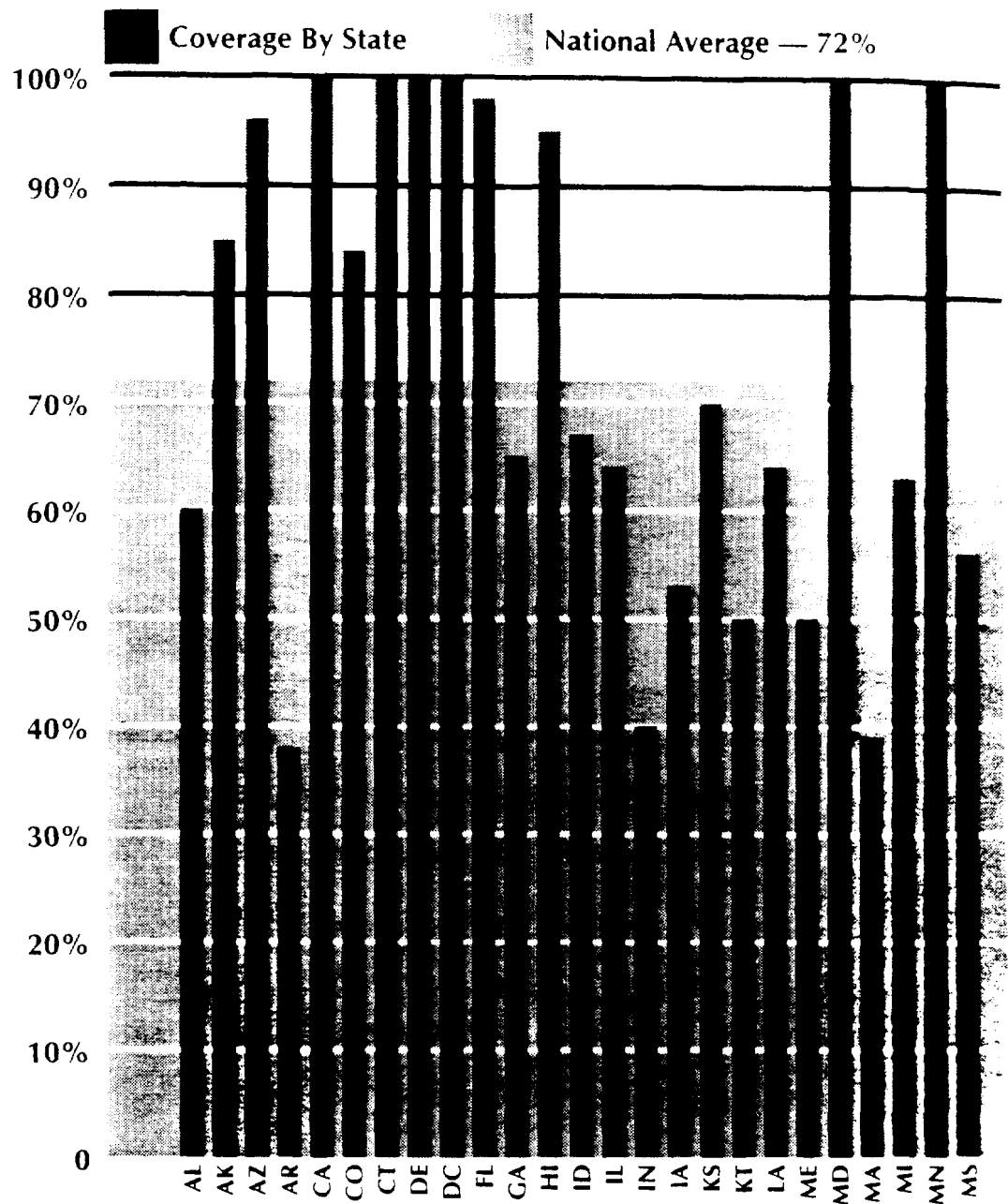


Putting
All the
Pieces
Together

by Sue Picetta



Percentage of Population Covered by 9-1-1



Minnesota Department of Administration — December 1992



Appendix A

9-1-1 Coverage and State Contacts

(December, 1992)

State	9-1-1 Coverage	State Agency	State Contact & Office Number
ALABAMA	60%	EMERGENCY MANAGEMENT	LEE HELMS 205-834-1375
ALASKA	85%		
ARIZONA	96%	ADMINISTRATION	OLGA SOTO 602-542-0911
ARKANSAS	38%		
CALIFORNIA	100%	GENERAL SERVICES	LEAH SENITTE 916-657-9911
COLORADO	84%		
CONNECTICUT	100%	EMERGENCY COMM BUREAU	GEORGE POHORILAK 203-566-3243
DELAWARE	100%	TELECOMMUNICATIONS	HOWARD E VOGELIEN 302-739-9693
DIST. OF COLUMBIA	100%		
FLORIDA	98%	GENERAL AVCS ADMINISTRATION	JIM MARTIN 904-487-2000
GEORGIA	65%	ADMINISTRATIVE SERVICES	SID FLYNT 404-656-2319
HAWAII	95%		
IDAHO	67%		
ILLINOIS	64%	COMMERCE COMMISSION	JOHN J GREENAN II 217-782-4911
INDIANA	40%		
IOWA	53%	DISASTER SERVICES DIVISION	DAVE MILLER 515-281-7534
KANSAS	70%		

State	9-1-1 Coverage	State Agency	State Contact & Office Number
KENTUCKY	50%		
LOUISIANA	64%		
MAINE	50%	PUBLIC UTILITIES	
MARYLAND	100%	ADVISORY COMMISSION	MARILYN FARNDON 301-764-4009
MASSACHUSETTS	39%	EMERGENCY TELECOMM BOARD	GLENN ROACH 617-727-7827
MICHIGAN	63%	EMERGENCY TEL SVC COMMITTEE	MARILYN MOORE 517-334-6380
MINNESOTA	100%	ADMINISTRATION	JIM BEUTELSPACHER 612-296-7104
MISSISSIPPI	56%		
MISSOURI	85%		
MONTANA	54%	ADMINISTRATION	LARRY PETERSON 406-444-2586
NEBRASKA	90%		
NEVADA	89%		
NEW HAMPSHIRE	30%		
NEW JERSEY	32%	OFFICE OF EMERG TELECOMM	JOSEPH SALLA 609-882-2000
NEW MEXICO	72%	ADMINISTRATION AND FINANCE	BOB GUNTER 505-827-4950
NEW YORK	65%		
NORTH CAROLINA	60%		
NORTH DAKOTA	50%	STATE RADIO COMMUNICATIONS	LYLE GALLAGHER 701-224-2127
OHIO	83%		
OKLAHOMA	59%		

State	9-1-1 Coverage	State Agency	State Contact & Office Number
OREGON	100%	EMERGENCY SERVICES DIVISION	DAVID YANDELL 503-378-2911
PENNSYLVANIA	45%		
RHODE ISLAND	100%	COMMISSION	
SOUTH CAROLINA	62%	INFO RESOURCES MGMT	TED LIGHTLE 803-734-3807
SOUTH DAKOTA	60%		
TENNESSEE	63%		
TEXAS	98%	ADVISORY COMMISSION	MARY BOYD 512-327-1911
UTAH	88%		
VERMONT	30%		
VIRGINIA	88%		
WASHINGTON	88%	COMMUNITY DEVELOPMENT	ROBERT OENNING 206-438-7737
WEST VIRGINIA	15%		
WISCONSIN	41%	PUBLIC SERVICE COM	JEFFREY RICHTER 608-267-9624
WYOMING	98%		